Master's Thesis of Public Administration

Measuring Users' Satisfaction from E-Government Services in the Democratic Republic of Congo

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Abstract

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E-government has been a lever for many countries efficiency and effectiveness in public service delivery. In the Democratic Republic of Congo, many ministries and agencies started to provide E-government services. This study measured users' satisfaction from E-services and identified determinant factors, which influence that satisfaction because it is the main goal of any E-government project. After conducting a survey on a population sample of 142 citizens who had an experience with E- services, a multiple linear regression was performed. Findings teach that overall users' satisfaction is relatively weak. Moreover, the empirical study reveals that among seven independent variables, four (Awareness, Accessibility, Service Quality, and Information quality) were the most significants which influence Users' satisfaction from E-government services. Five control variables (Gender, Age, Education, Profession and Frequency of E- services

utilization) were include in the regression. Strikingly none of them had a significant impact on user's satisfaction.

The study is concluded by recommendations to all stakeholders in E-government chain in aim to maximize its potential and meet users' expectation for their satisfaction.

Key Words: E-government, E-services, E-satisfaction, awareness, trust, privacy and security, accessibility, service quality, information quality.

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Table of Contents

Abstract ..... **ii**
Table of Contents ..... **v**
List of Tables ..... **viii**
List of Figures ..... **viii**
CHAPTER 1: INTRODUCTION **1**
1.1. Background 1
1.2. Purpose of Research 4
1.3. Research Questions 5
1.4. Significance of the study 5
1.5. Scope of the study 6
CHAPTER 2: LITERATURE REVIEW **7**
2.1. Conceptual development and hypothesis formulation 7
2.2. Expectation-Confirmation theory 7
2.3. E-government 8
2.3.1. Definition 8
2.3.2. Benefits leading to E-government implementation 11
2.3.3. E-government implementation stages 18
2.4. Overview of E-government in the Democratic Republic of Congo 20
2.5. Factors influencing users' satisfaction from E-government services 23
2.5.1. Awareness 23
2.5.2. Trust 25
2.5.3. Security and privacy 27
2.5.4. Accessibility 28
2.5.5. Service quality 29
2.5.6. System Quality 30
2.5.7. Information Quality 31
CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY **34**
3.1. Research design 34
3.2. Analytical Framework 34
3.3. Sampling Procedures 35
3.4. Data Collection 36

3.5. Survey Instrument 36
3.6. Criteria of measurement 37
3.7. Data Analysis Procedures 37
CHAPTER 4: PRESENTATION, ANALYSIS AND DISCUSSION OF RESULTS 39
4.1. Descriptive statistics 39
4.1.1. Descriptive statistics of survey respondents 39
4.1.2. Demographic category comparisons for satisfaction from E-government services 41
4.1.3. Descriptive statistics of independents variables 43
4.1.4. Demographic category comparisons for Awareness 43
4.1.5. Demographic category comparisons for Trust 46
4.1.6. Demographic category comparisons for Privacy and confidentiality 48
4.1.7. Demographic category comparisons for Accessibility 50
4.1.8. Demographic category comparisons for Service Quality 52
4.1.9. Demographic category comparisons for System Quality 54
4.1.10. Demographic category comparisons for Information Quality 56
4.2. Reliability of the survey Instrument 58
4.3. Pearson's correlation coefficients test 58
4.4. Variance Inflation Factors 61
4.5. Regression Model 62
4.6. Hypothesis testing 63
4.6.1. Hypothesis 1 63
4.6.2. Hypothesis 2 63
4.6.3. Hypothesis 3 63
4.6.4. Hypothesis 4 63
4.6.5. Hypothesis 5 64
4.6.6. Hypothesis 6 64
4.6.7. Hypothesis 7 64
4.7. Discussion of findings 65
CHAPTER 5: CONCLUSION AND RECOMMENDATION 72
5.1. Conclusion 72
5.2. Policy Recommendation to Congolese government 74

5.3. Recommendations for future studies 75
5.4. Limitation of the study 76
Bibliography 77
Appendix 84
Abstract in Korean 88
Acknowledgment 90
In Memoriam 92

List of Tables

Table 1: Institutions definitions of E-government 9
Table 2: E-government relations and characteristics 11
Table 3: Random DR Congo public portal 22
Table 4: Factors influencing users' satisfaction under the current study in the literature. 33
Table 5: Statistics of survey respondents 40
Table 6: Demographic category comparisons for satisfaction from E-government services 42
Table 7: Descriptive statistics of independents variables 43
Table 8: Demographic category comparisons for Awareness 45
Table 9: Demographic category comparisons for Trust 47
Table 10: Demographic category comparisons for Privacy and confidentiality 49
Table 11: Demographic category comparisons for Accessibility 51
Table 12: Demographic category comparisons for Service Quality 53
Table 13: Demographic category comparisons for System Quality 55
Table 14: Demographic category comparisons for Information Quality 57
Table 15: Result of Pearson's correlation coefficients test 60
Table 16: Variance Inflation Factors 61
Table 17: Regression Coefficient 62
Table 18: Hypothesis testing 65

List of Figures

Figure 1: Expectation-Confirmation theory schemas 7
Figure 2: E-government Development Index 23
Figure 3: Conceptual framework to influence citizens' satisfaction in DR. Congo 35

CHAPTER 1: INTRODUCTION

1.1. Background

The use of Information and Communication Technologies (ICTs) in the public service frameworks (E-government) is growing both in developed and developing countries (Bwalya and Mutula, 2014). Thus, ICTs have transformed people live and tend to be effective tools for public sector in its relation with all stakeholders in society.

By adopting ICTs in public service delivery, some countries attempt to increase effectiveness and efficiency (Mohammed et al., 2010) in order to enhance quality of public service delivery. Yet, others are motivated to implement E-government frameworks so as to jump onto bandwagon of countries implementing E-government and keep up with Joneses (Bwalya and Mutula, 2014) because E-government has become a non-negligible factor for countries competitiveness as argued Klievink and Janssen cited by Bwalya and Mutula (2014).

Whether adoption of E-government has been influenced by inherent values recognized to it or just by bandwagon effect, it is important to look at the success of E-government projects across the globe. Moreover in regard to each country localization as well as to its political, social and economic environment. Plausibility of analyzing E-government success and factors which lead to that is irreversible when we come to the evidence that it is not a secret that many E-government projects in the world fail completely or partially or do not meet their intend targets, Heeks (2004) cited by Bwalya and Mutula (2014).

Arduini et al. (2011) cited by Bernd et al. (2016) opine that governments all over the world have incrementally employed E-government websites to improve public administration efficiency by augmenting effectiveness, quality, transparency and availability of information and services for their citizens. Even with the growing wave in providing E-government services, knowledge about its success remains limited.

According to Lee, Kim and Ahn (2011) E-government literature has been dominated by a one way analysis of E-government success. Scholars focused more on E-government services from a supplier side (public service) with less attention on demanders or other stakeholders such as citizens, businesses, agencies, etc.

Government undertakes all project in light of serving citizens, thus obtaining their satisfaction because government belongs to them (stated Kin and Stivers, 1998 cited by S. Osborne, 2010). E-government has a citizen-centric trend which merge with New Public Service pioneers ideas. They advocate that each government action must have citizens as the heart of the project (Janet and Denhardt, 2000). Therefore, it is important to measure users' satisfaction from E-government services.

According to Vishanth et al. (2016) citizen's satisfaction is acknowledged as one of the most significant indicators for E-government adoption and diffusion.

Progressively, a number of studies focusing on users' satisfaction with E-government are gaining space in the literature but still rare (Wirtz and Tuna, 2016). Quoting Reddick and Roy (2013), Wirtz and Tuna (2016) came to the conclusion that, users' satisfaction has become a crucial factor for determining E-government success and can be defined as the ability of citizens/customers to get required information and to have a service experience that solves their concerns.

Alawneh et al. (2013) state that regarding the demand-oriented approach, users' satisfaction is a crucial factor for success or failure of E-government. Alias et al. (2011) argue to their side that citizen's satisfaction is an important indicator in providing a general concept as to how well the government has performed its services in accordance with its citizen's needs. In the same line Harfouche (2010) outlines that providing E-services access and creating conditions for its usage (e-access and e-skills) does not guarantee the acceptance and use of public eservices by citizens. Thereby, adoption of E-services and satisfaction from them are beyond provision.

Citing his previous work, Oliver (1999) states that satisfaction is pleasurable fulfillment.

It is the consumer's sense that consumption provides outcomes against a standard of pleasure versus displeasure. In other words, Satisfaction is a positive feeling of the client after using a product. The cognitive process of satisfaction happens in each situation where we have on one side demander and on another

side supplier. It goes without saying that, this occurs also when it comes to E-government. Alaa et al., (2014) define E-satisfaction as the levels of experience and fulfillment citizens gain from using E-government services in terms of content, speed, quality, security, and interface.

There are many determinants which influence E-satisfaction. Based on previous researches (Alawneh et al., 2013; Yi-shun W. and Yi-wen L, 2007, etc.), we identified potential factors which have a strong effect on users' satisfaction. These factors are, awareness, security and privacy, trust, accessibility, service quality, system quality, and information quality.

For the purpose of the current study, E-satisfaction is understood as Congolese perception and fulfillment from using E-government services in terms of awareness, security and privacy, trust, accessibility, service quality, system quality, and information quality.

1.2. Purpose of Research

The Use of ICTs in public service delivery seems to become irreversible in the era of technology revolution. Governments strive to increase both quality and speed in their services. For that reason, implementation of E-government takes place in government agenda priorities in many countries. User's or citizen's satisfaction is the ultimate goal in such project as it is for each government existence.

The Democratic Republic of Congo has come up with many initiatives of

E-government in various spheres of public service which aim to respond to user's needs, enhance quality of public service delivery and to communicate adequately with citizens. Such projects have been undertook at the national level as well as at the local level.

The purpose of this study is to find how users are satisfied with E-government services and to identify which factors affect users' satisfaction from E-government services in the Democratic Republic of Congo.

1.3. Research Questions

From the above background, the current research will answer to the following questions:

R.Q1. How users' are satisfied from E-government services in the Democratic Republic of Congo?

R.Q2. What are significant determinants for users' satisfaction from E-government services in the Democratic Republic of Congo?

1.4. Significance of the study

The significance of this study comes from its potential to be useful for Congolese government, citizens, agencies, businesses and all stakeholders involved in E-government project. It goes without saying that it tries to increase awareness of riders on E-government state in the Democratic Republic of Congo on one hand, and to provide user's feedback from E-government services on the

other hand.

This study has the merit of being one of the first researches on E-government in the Democratic Republic of Congo especially in the capital city, Kinshasa. Thus it aims to participate to the literature for future studies on E-government looked from the users' satisfaction perspective in any country with a social, economic and/or political background comparable to the Democratic Republic of Congo.

The current study has a policy implication in the sense that, it's also trying to point out challenges which need to be overcome in the process of E-government implementation for the final goal of satisfying users. Therefore, it is an advocate to lawmakers, policymakers, citizens and all stakeholders to move toward a common direction for the end of getting maximum profits from ICTs at the national and local level for citizens' satisfaction and country development.

1.5. Scope of the study

The study is designed to measure users' satisfaction from E-government services in the Democratic Republic of Congo. Because of continental dimension of the country, primary data will be gather in the capital city, Kinshasa. This has been chosen for being the most populated area with around 12.000.000 inhabitants and the nerve center of all institution. Consequently, Kinshasa will be our space of research.

CHAPTER 2: LITERATURE REVIEW

2.1. Conceptual development and hypothesis formulation

2.2. Expectation-Confirmation theory

Oliver (1980) developed expectation-confirmation theory (ECT). It is widely used in consumer satisfaction, post-purchase behavior, and service marketing in general (Bhattacherjee, 2001). ECT has four stages as following, first the consumer build an expectation on a specific service, then at the second stage he uses the service and comes up with a perception on the performance of that service based on his first experience. From the second stage, the consumer or user try to balance his prior expectation with the perceived performance, which may lead to confirmation or disconfirmation and this is the third stage. At the last stage the consumer has a feeling of satisfaction or dissatisfaction. In case of satisfaction, the consumer will form a re-purchase intention while it will not be same in case of dissatisfaction.

Figure 1: Expectation-Confirmation theory schemas

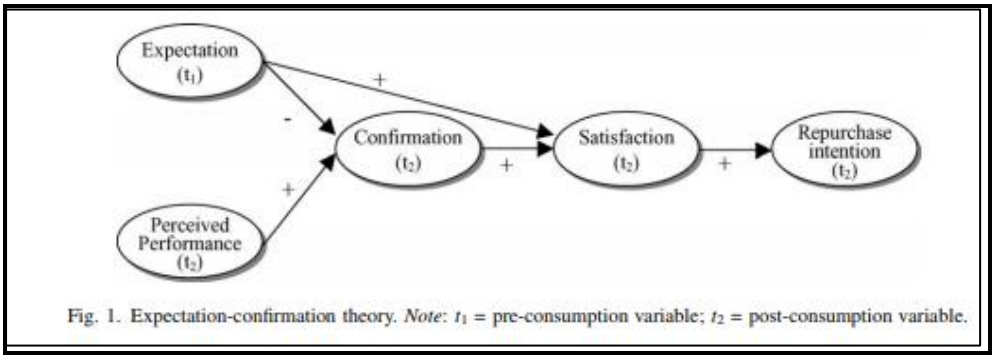


Fig. 1. Expectation-confirmation theory. *Note*: t_1 = pre-consumption variable; t_2 = post-consumption variable.

Source: Oliver (1980)

In critic to ECT, some authors like Batthacherjee (2001), argue that possibility of change in consumers' expectation may occur after the first use. Then repurchase motivation may differ from prepurchase intention or expectation. Fazio and Zanna (1981) state that, pre-purchase expectation may be driven by external factors to the user or consumer such as advertisement or social pressure, while post-purchase expectation is, most of the time, the consequence of the users' first-hand experience.

Despite some critics, this theory has been used to analyze Information System (IS) adoption (Batthacherjee, 2001) or web portal acceptance (Cathy et al., 2004). It is explained in terms of users' continuance or discontinuance of the web portal. A correlation has been found between web portal users' satisfaction and the confirmation of their expectation as well as their intention of continuance.

2.3. E-government

2.3.1. Definition

Considering the fact that E-government is an interdisciplinary field where overlap public administration, political science, communication and media studies, law, public policy, engineering and computer sciences, etc. (Gregory G., 2007), there is no common definition of E-government. Yet, it is widely admitted that E-government refers to use of ICTs in the public sector like tools of communication and service delivery to citizens, business, agencies, etc. (Bwalya and

Mutula, 2014; Kodjo N., 2018; Shailendra C. and Sushil S., 2007, etc.). Thus, we may opine that E-government is not computerization of public documents because it implies availability of those documents and other services to public.

In his definition of E-government, V.M. Rao (2007) tend to highlight that E-government is not synonymous of on-line government as it may appear from various authors and institutions. He explains that E-government is effectively convened with all ICTs in public service delivery, not only application of remote access through telecommunications.

Referring to couple of works in the literature, Yildz (2007) defines E-government according to values it has. From that perspective, E-government relates to the use of ICTs in public service for the end of facilitating interconnectivity, service delivery, efficiency, effectiveness, transparency, and accountability. In the situation of multiple definitions of E-government oriented by the motivation of E-government implementation, we may rely on those provided by some international organizations.

Table 1: Institutions definitions of E-government

Definition	**Sources**
E-government refers to government-owned or operated systems of information and communications technologies (ICTs) that transform relations with citizens, the private sector and/or other government agencies so as to promote citizens empowerment, improve service delivery, strengthen accountability, increase transparency, or improve government efficiency.	World Bank Group (2001)
E-government is defined as utilizing the Internet and the world-wide-web for delivering government infor-	United Nations (2002)

mation and services to citizens.	
E-government is the continuous optimization of service delivery, constituency participation, and governance by transforming internal and external relationships through technology, the Internet and new media.	Gartner Group (2000)

Source: From above institutions

OECD (2003) looks at E-government as a tool of better government, which should be user-focused; multi-channel services delivery and coordinated by bringing the whole government system together. However, E-government reform is based primarily on the argument that digital governance enhances public performance (Gable, 2015).

Jeong (2007) states that, with ICTs relations occur between citizens and their government (G2C), between governments and other government agencies (G2G), between government and citizens (G2C), between government and employees (G2E), and between government and business/commerce (G2B). Yildz (2007) adds the relation between citizens (C2C).

Table 2: E-government relations and characteristics

No	Type of relation	Stakeholders	Characteristics
1	G2C	Government and citizens	Web presence facilitating public services and citizens access to government information. It promotes communication, transparency, accountability, efficiency and effectivity.
2	G2G	Government at the national and local levels and public agencies	Web presence which promotes interaction between government entities and collaboration space seamless. It contributes to communication, coordination and standardization of public services.
3	G2B	Government and businesses	Reduce administrative cost and time by enabling businesses to proceed through web with service such as renewing of license, tax paying, etc. It promotes communication and accessibility to needed information and service with saving time.
4	G2E	Government and employees(public officials)	Contributes to internal efficiency, effectivity, and optimization of productivity by promoting speed information sharing.
5	C2C	Citizens and citizens	Contributes to citizens' empowerment by opening the web space to civic discussion on public issues.

Source: Adapted from Yildz (2007) and Bwalya and Mutula (2014).

Above definitions teach which benefits may drive government's will for E-government implementation. We discuss key advantages of E-government in the next section.

2.3.2. Benefits leading to E-government implementation

Judicious implementation of E-government contributes to effective, efficient, transparent and accountable public administration and citizens' empowerment. This is the belief of many scholars in this field (Gianluca C. Miscura, 2007;

Yildz, 2007; Heeks, 1999). The phenomenon of E-government is increasingly attracting the attention of communities, citizens, politicians, economists, decision and policymakers, lawmakers, etc. It has improved managerial effectiveness, and promoted democratic values of public services. It has the promise of increasing accessibility to information, enhancing efficiency and facilitation of greater access to basic services as well as to civil servant (Safeena R. and Kammani, 2013).

2.3.2.1. Efficiency and effectiveness

Efficiency and effectiveness refer to the capacity of government to achieve fixed goals and to prove the best use of available resources. Effectiveness looks more to the ability of the government to realize set projects while efficiency look at its capacity to realize those project successfully at the low cost without waste of resources. E-government has the advantage of helping government to increase service quality and to reduce the expenditure cost in public service delivery by saving time and downsize organizations. E-government strengthen users (citizens, businesses, etc.) efficiency and effectiveness by reducing time or distance barriers in their relation with public services.

Efficiency of E-government is not only at the advantage of public service customers, it is also helpful within the government by facilitating information's transmission and reducing data collection cost.

2.3.2.2. Transparency

Transparency has become a widespread notion of good governance in

different contexts today (Eom, 2014). Governments across the globe are engage in fight against corruption by increasing their openness and making their actions more transparent by releasing more information. For that reason, use of ICTs in public administration gives opportunity to create transparency and promote anti-corruption policies and practices (Lupu and Lazar, 2015). ICTs makes the society more demanding from governments in terms of information while governments used to see information as one of their power attributions. Thus, steady use of ICTs may be seen as a threat to government monopoly. However, making a government more transparent contributes to government effectiveness and trust building with citizens.

Several authors conducted research on the nexus between E-government (ICTs), transparency and corruption reduction (Mulgan, 2007; Shim and Eom, 2008; Bertot, Jaeger and Grimes, 2010; Lupu and Lazar, 2013) and concluded that, used with efficacy, E-government help to lower corruption and promote culture of transparency.

Transparency relates to availability of information on decision-making process, laws, fiscal information, etc. to the public. The Council of Europe gave some criteria to analyze if a country is achieving transparency or not (European Union Council, 2018). Two main criteria can be pointed out:

- Information on decisions, implementation of policies and results is made available to the public in such a way as to enable it to effectively follow and contribute to the work of local authority.
- Public may access to all information which is not classified as secret or special by law for well reasons such as army strategies, privacy protection, etc.

Transparency has been highly associated with accountability in literature (Halachmi, (2011); Bovens (2005); Scott (2005)). For a government to be accountable, the first stage is to know what it does.

The idea of transparency with ICTs is not blindly accepted. In their book, Hood and Heald (2006) state, "the target to reach the highest level of good governance by keeping government more and more open may be pervasive. Because it may conflict with other good governance values. Thus, this lead to a tighter control of information". This opinion still relevant when we look at the evidence that governments tend to release information according to their motivations or strategies. Moreover, greater transparency makes, at some extent, the government vulnerable to some citizens, politicians, media, international community, etc. By having large amount of information about what the government is doing or intend to do, these categories of people can raise inappropriate critics which can impede government actions.

Couple of authors, Liu, Horsley, and Yang (2012); Grmmelikhuijsen

(2012), opine that more and better information affect positively media reporting. Yet, most of the time, this is not the case with governments. When government release information, public looks at it as less trustworthy. This situation shows a predisposition for the public to accept media news about the government first and looking to what the government says in a second position. Such situation may be understood by the fact that public seems to be more controlling the government and media plays a huge role in that game while government is seemed as a defender of his own case.

Transparency is an anteroom of accountability, and E-government is a channel for accountability. Wong and Welch (2004) stated that accountability may be elusive in public administration area, but it often refers to answerability of government to the public on its performance. But it may also be a tool for authoritarian government used in aim to control information and watch civil servant activities against the regime. However, in light of Bertot et al. (2011), lack of transparency and accountability may flourish malfeasances in the public sector, such as:

- Making corruption less risky and more attractive;
- Preventing the use of public incentives to make public officials acts responsibly and in the public interest;
- Creating informational advantages to privileged groups;
- Instilling and perpetuating control over resources;

- Incentivizing opportunism and undermine cooperation;
- Limiting the ability to select for honesty and efficiency in public sector positions and contract partners; and
- Impeding social trust, and therefore development.

Halachmi A. and Greilling D. (2013) argue that greater transparency and accountability that occurs with E-government changes public service mindset from "governing" to "governance" and with this metamorphosis, government becomes only a step in the chain of public policy design and implementation. It even creates a new order of power where politians cannot swim freely in trouble water of decision making because of great fishers (population) who wait for a little opportunity to take them out of water and sue them to public opinion court. That why E-government is consider as a lever of citizens' empowerment.

2.3.2.3. Citizens empowerment

E-government as a citizen-centric approach, tries to give to citizen voice in public affairs management. Citizens are becoming more and more demanding about each policy process and want to be considered as actor rather than simple costumers of public administration. Even in democratic system, role of citizens does not end with election but they want to be involved at each stage of discussion about public issues. The current trend in the pursuit of common good is to increase citizens' participation in policy making process. Participation can be understood as harvesting public opinion prior to taking any action on citizens or for them.

According to Robert cited by Manuel Pedro Rodríguez Bolívar (2018), participation should be considered as the process by which members of a society (those not holding office or administrative positions in government) share power with public officials in making substantive decisions related to the community. Sharing power with citizens implies allowing them to actively contribute in designing and implementing public policies, thus acting as co-producers and not simply as passive users (Asma Al-Hashmi and Abdoul Basit, 2008).

Linked to E-government, citizens' empowerment pass through E-participation. E-participation lies in the relation between government and citizens (G2C) (Jeong, 2007), and is part of e-democracy which is defined as the use of ICT to support the democratic decision-making process (Ann Macintosh, 2004).

For Chee Wei Phang and Atreyi Kankanhalli (2008), E-participation refers to citizens' voluntary participation and involvement in public administration affairs and public decision making using Web-based applications provided by the government.

Considering the above and Macintosh A. (2004) development on e-democracy, it is assumed that E-government is an opportunity to increase citizens' power. Moreover it strengthens countries democracy by facilitating access to information to all citizens regardless to their background (e-enabling), stimulating their interest to engage in public debate (e-engaging) and by promoting a bottom-

up approach in collecting ideas which may influence political agenda (e-empowerment).

Citizens' empowerment may be seen as bureaucrats power challenger because administration is gradually moving from street-level bureaucracy to screen-level bureaucracy where citizens interact with government's electronic applications as stated by Bovens and Zouridis (2002). This affects bureaucrats' discretion at some extent. Discussing transformation of public service delivery channels, Harfouche et al. (2009) distinguished the face-to-face service delivery system and virtual channel of service delivery system. The first is qualified as traditional Channel Service Delivery (CSD) where public officials deliver services to citizens as customers while at the opposite, there is the virtual channel of service delivery system qualified as "self-services" where services are produced (delivered) by citizens themselves. In the second, citizens interact with technological interfaces. Nonetheless, it must be admitted that E-services do not abolish human intervention so as public officials' involvement. It only reduces their scope of intervention.

2.3.3. E-government implementation stages

E-government implantation is a process with different stages and each stage has its characteristics. Karen Layne and Jungwoo Lee (2001) identified four stages in E-government implementation as an evolutionary process (cataloging, transaction, vertical integration and horizontal integration). The Gartner (2000)

group pointed out four stages (presence, interaction, transaction and transformation). The UN/ASPA (2001) proposes five stages of government web presence (Emerging Web Presence, Enhanced Web Presence, Interactive Web Presence, Transactional Web Presence, and Fully Integrated Web Presence).

A. Emerging Web Presence: at this stage, the government starts with an online existence by providing general information;

B. Enhanced Web Presence: here the government increases information on the web site with regularity;

C. Interactive Web Presence: interaction refers to the possibility for citizens to download forms and make appointments and requests on line;

D. Transactional Web Presence: at this stage citizens can pay for services or conduct financial transactions online;

E. Fully Integrated Web Presence: this seems as the last stage where a total integration of e-functions and services across administrative and departmental boundaries.

In their paper, Asma Al-Hashmi and Abdoul Basit, (2008) state that these stages don't follow one way as if they must come one by one and the first before the second. Each country can proceed in its own way with the possibility of implementing all stages in one shot.

With all E-government advantages which have been discussed above,

many countries have been successful regarding to outcome of this administrative revolution, especially in corruption reduction (Shim and Eom, 2008; Bertot J. et al., 2011). Considering that, there is a steady trend of comparison between government systems and performance regardless to political and socio-economic differences across the globe. Thus, looking to what some governments are able to claim as achievement thanks to E-government reform, other government put themselves under the conviction that, if other are able to do this, why not us (Halamchi A. and Dorothea Greilling, 2013).

With its potential, the Democratic Republic of Congo saw, through public organizations, E-government as a way to go in aim to revitalize public administration.

2.4. Overview of E-government in the Democratic Republic of Congo

Located at the heart of Africa, the Democratic Republic of Congo is a country with more than 85.000.000 inhabitants spread on 2.345.410 kilometer square. Taking into account its dimensions and its population, use of E-government seems to be a powerful tool in aim to respond effectively to public demand.

E-government is an important crutch for the Congolese public sector reform which is urgent regarding to inefficiency and infectivity which characterize most of public services. Furthermore, with its wave of decentralization, the Democratic Republic of Congo may get benefit from E-government implementation

to strengthen relations between central and local governments or between local governments (in other word to promote good intergovernmental relations) and increase quality in public service delivery at each level of the state.

Kodjo (2018) states that the idea of using techniques information and communication has been considered since 80s in the Democratic Republic of Congo (Ex. Zaire). But lack of a national strategy for E-government implementation led to sectorial initiatives of E-government services.

As Kodjo (2018) reports in his paper, E-government implementation in public service depends on each entity priority and capacity of mobilizing founds for such project. At some extent, it is a fact of political or managerial advertisement in aim to show an apparent modern management.

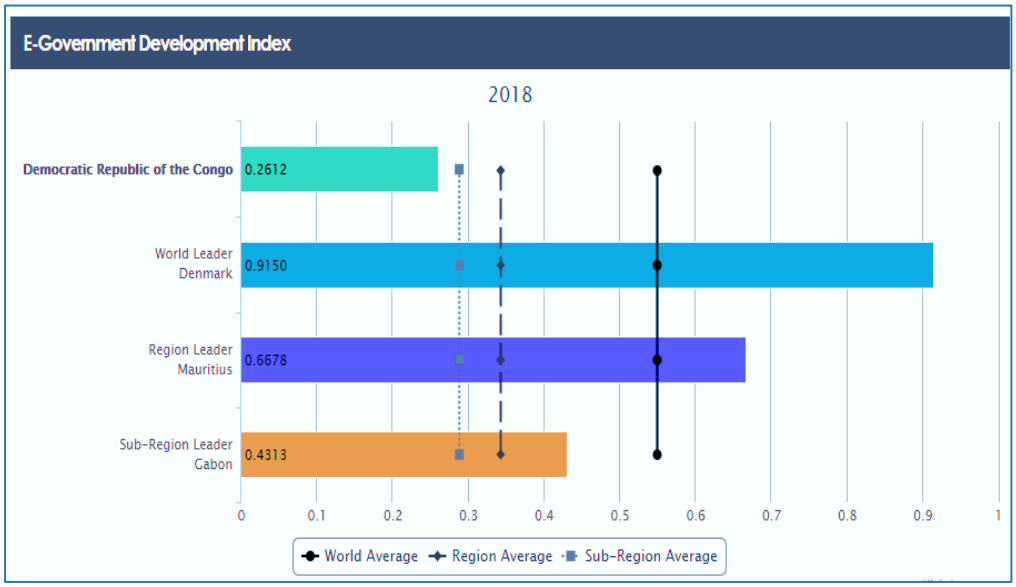
Yet, public services which use of ICTs struggle by all means to provide adequate services for users 'satisfaction. The following table shows randomly selected public service portals and the relations which happen between administration and users.

Table 3: Random DR Congo public portal

No	Institution/department	Website	Categories of E-government relation	Type of service
1	National portal	www.congo.gouv.cd	G2C; G2G; G2B; G2E	Provides information about all institutions of the country.
2	Président	www.president.cd	G2C; G2G	Provides information about president activities with possibility for citizens to send any suggestion, question or complaint.
3	Sénat	www.senat.cd	G2C	Provides information about senate activities
4	Journal officiel	www.journalofficiel.cd	G2C; G2B; G2G	Provides all laws, administrative and judiciary acts which are supposed to be published according to legal prescription and online services.
5	Guichet Unique de création d'entreprise	www.guichetunique.cd	G2B	Provides information and online services for trade companies.
6	Agence National pour la Promotion des Investissements	www.investindrc.cd	G2B	Provides information and online services about business opportunities and facilities for those who want to invest in the country.
7	Direction Générale des Impôts	www.dgi.gouv.cd	G2C; G2B; G2G	Provide information about fiscal situation of the country and its tax policy, as well as legal texts. It also provides online services.

In the 2018 United Nations E-government survey, DRC ranked 176th out of 193. This shows that the country still has a long way to go to reach the fully integrated level of E-government. From this perspective, it is inevitable to assess whether previous E-government initiatives satisfy users and to identify the strengths and weaknesses of E-government development in the Democratic Republic of Congo in order to advocate for a strategic implementation of E-government.

Figure 2: E-government Development Index



Source: UN E-government knowledgebase, 2019

2.5. Factors influencing users' satisfaction from E-government services

2.5.1. Awareness

Awareness refers to the extent to which citizens are aware of the intro-

duction of an E-government service (Charbaji and Mikdashi, 2003). Prior researches have suggested that users' awareness is crucial for developing their attitudes toward using IT innovations in general (Sia end al., 2001) and government technologies in particular (Charbaji and Mikdashi, 2003; Jaeger, 2003). Jaeger (2003) indicated that governments may be overly ambitious with E-government, investing sizable amounts yet not sufficiently making citizens aware of available E-government services (Frank K. Y. and al., 2010).

Frank K. Y. et al. (2010) state that, Governments make public service announcements (PSAs), such as advertising broadcasts on radio or television, to increase citizens' awareness about issues of public interest, such as health, safety, and environmental protection. PSAs have been found to effectively increase public awareness, promote social norms, and change normative beliefs among message receivers (Borzekowski and Poussaint, 1999; Monahan, 1995). The more effective the PSAs are in creating citizens' awareness about public issues, the greater is the normative pressure being created in society. When the adoption of an E-government technology is mandatory, governments will need to devote more resources to create greater citizens' awareness and social norms in order to promote citizens' use of the mandated technology (Brown et al., 2002) quoted by Frank K. Y et al. (2010).

Thus, awareness is one of key determinants, which affect user's satisfaction from E-government services. For the purpose of the current study, awareness

is defined the level to which Congolese citizens are aware of public service portal existence and its available services.

Based on the above discussion and previous studies we hypothesis as follows:

H1. Awareness of public services portal and proposed services influences positively Congolese satisfaction about E-government services, all else equal.

2.5.2. Trust

The concept of trust can have different meanings and is a subject that has been of interest in variety of fields of human endeavor (Bannister and Connolly, 2011) cited by Ricardo S. and al. (2018). There is no unanimous definition of citizen trust in government definition. However, most authors agree that it is an important determinant of public action and cooperation (Ruscio 1996; Thomas 1998) cited by Eric Welch and al. (2004). For Pavlou and Fygenson (2006), trust refers to the belief that trustee will act cooperatively to fulfill the trustor's expectation without exploiting its vulnerability.

The government-citizen relationship plays a key role in the formation of trust in the government web services. Hence, citizen's trust in government should directly influence his or her trust in government web services (Vishanth and al., 2016). Trust becomes increasingly important in web-based environments where the trustee and the trustor are not in each other's physical presence. As a result,

privacy and security can be at great risk. In contrast, if an E-government technology cannot be trusted to act in a manner it promises, citizens will not expect to fully realize the utility of the technology. If citizens are forced to use a technology that they do not trust, it is likely to result in negative perceptions (Frank K. and al., 2010). Moreover, looking at E-government services, trust must be looked through two lenses. First trust in the government, which implement E-services, and trust in E-services to satisfy citizens without any risk to their freedom, privacy and security. In the first case, trust in government is challenged by the distance and/or information gap between the government and citizens. The less citizens understand government policies or have information/date about what the government is doing, the luckily trust in the government may be affected. This seems to be imperturbable trend in the era of information dissemination (Musso, Weare, and Hale, 2000), to the other hand, trust in E-services implies its ability to be effective.

For the purpose of the current study, trust refers to the Congolese citizens' perception that with E-government, the government will act in way to satisfy their expectation and their confidence in using public services portal. Thus we hypothesis as follows:

H2. Congolese Trust in E-government influences positively public portal users' satisfaction to their satisfaction with proposed services, all else equal.

2.5.3. Security and privacy

Without careful design application and oversight, artificial intelligence tools could harm vulnerable populations, reinforce existing inequalities, widen digital divides and adversely affect jobs and economies, as well as privacy, denial of service and other cybersecurity issues (UN 2018, E-government survey). In this sense cybersecurity is one of the most vulnerable side of web sites across the globe and raises the issue of cyber terrorism which threatens interaction in the cyberspace.

Security refers to assurance that government portal is safe from cyberattack and the quality of ensuring information confidentiality, integrity and availability (Mukamurenzi S. end al., 2019). Privacy refers to the fact that users' data are not used without their consent (Mukamurenzi S. end al., 2019). Thus it implies that users know which category of people may access to their information about each activity they proceed through public service portal.

Privacy and security are among factors which may affect positively or negatively E-satisfaction depending on the feelings they have regarding to this two elements. They are challenging problems faced by customers who wish to trade in e-commerce world (Dixit and Datta, 2010). This is also relevant for E-government. Privacy and security are fundamental to the integrity and growth of e-business in general. This is even more critical with E-government, as governments typically keep more information about their citizens than do web-vendors

(Alawneh A. et al., 2013). Violation of security and privacy rules may backfire in terms of losing customers (users) and negative word-of-mouth (Dixit and Datta, 2010).

For the purpose of the current study, security and privacy refers to Congolese belief that government portal is protected from external attack and the confidence that their information will not be used or manipulated by unknown persons without their consent. Thus we hypothesis as follows:

H3. Security and privacy of public services portals have a positive impact on Congolese E-satisfaction, all else equal.

2.5.4. Accessibility

According to Henry (2006), web accessibility is the possibility of people to use, perceive, understand, navigate and interact with the web. Mukamurenzi et al. (2019) define web accessibility as the quality to be reached and used by many users. For the international standards Organizations (ISO), quoted by (Alawneh A. et al., 2013), accessibility is the usability of product, service, environment or facility by people with the widest range capacities. They define in their paper accessibility as the user's perception of user interface quality of the Jordan national E-government portal for conducting the government transactions from any location, at any time of the day.

Accessibility relates to both web design which refers to the portal appearance and its ease of usage, which refers to the degree of ease using the web and

the facility to search for information (Mohammed et al., 2010). These have impact on users' satisfaction and behaviors (Yoo and Donthu, 2001; Lee and Lin, 2005).

For the purpose of the current study, accessibility refers to Congolese perception of public portal availability and their facility to proceed with available services regardless to time and location. Thus we hypothesis as follows:

H4. Accessibility to Congolese public service portals has a positive impact on users' satisfaction, all else equal.

2.5.5. Service quality

Lee and Lin (2005), state that many online organizations fail as a result of poor E-services quality. Online service quality must be looked from two different dimensions; technological dimension, which refers to what is delivered (the content), and the functional dimension, which refers to how the service is delivered (the manner) (Alawneh A. and al., 2013). Unfortunately, many E-government have been developed without paying full attention to quality of its services and the requirement of citizens (Papadomichelaki and al., 2006). E-services quality provides online organization competitive advantages by improving the organization performance and clients' satisfactions (Santos, 2003). Quality of E-government services can play an enormous role in improving E-government efficiency as well as increasing citizens 'satisfaction (Mohammed et al., 2010). E-service quality is in relation with effectiveness and efficiency, reliability of infor-

mation and responsiveness of public service. Lack of these affect E-service quality, which is an imperative for E-government success and users' satisfaction. Thus, Electronic services quality is among important factors that determine success or failure of electronic application (Zavareh et al., 2012) both in commerce and in public service delivery.

For the purpose of the current study, service quality is defined as Congolese fellings that the expected services are delivered in the right time, without bias and the capacity of the public service portal to respond without delay to citizens' demands. Thus we hypothesis as followed:

H5. Service quality of the Congolese public services portal has a positive impact on users' satisfaction, all else equal.

2.5.6. System Quality

E-government works for many services through websites. This makes websites a backbone in the relation between citizens and public service in the era of online services. Thus, search of functionalities and navigation become crucial for citizens' satisfaction and usage continuance intention. This refers to system quality (McKinney et al., 2002).

System quality refers to the features and performance characteristics of E-government Web sites regarding the quality in use or the citizen's view of quality. It is an important determinant of user acceptance, and users' satisfaction. In order for citizens to continually use E-government websites or for the success of

E-government, website system quality should be high (Safeena R. and Kammani, 2013).

For the purpose of the current study, System quality refers to Congolese perception of public services websites ease of use in terms of clarity and simplicity of functions and web design. Thus we hypothesis as follows:

H6. System quality influences positively citizens' satisfaction from E-government services, all else equal.

2.5.7. Information Quality

Quality of information perception is one of components in the customer choice for using one service among many. Information quality is composed of many dimensions such as relevance, timeliness, accuracy, understandability, and completeness of the released information (Saha P., Nath A., and Salehi Sangari E., 2012; Safeena R. and Kammani, 2013)

Information quality is one of key factors for citizens' satisfaction in the way that, it gives the idea about the service used by citizens. In case information do not respond to criteria of quality, it undermines citizens' satisfaction (Chen, 2010).

With the steady usage of ICTs in public sector as a tool for public services, governments try to release information as much as possible which leads to rain of information in any sector. Yet, quantity of information does not ensure quality of information.

This leads to analyze if accessibility to information implies quality of information. Porumbescu and Im, cited by Im (2017) provide three (3) criteria to evaluate the correlation between quantity and quality of information (completeness; color and usability):

- **Completeness** refers to the degree of balance between quantity and quality of the released information. Quantity of information put on the web site can give a picture of transparence but those information do not always give all sides of the government's policy. Sometimes, government hides the bad side that can affect its policy.
- **Color** refers to positive bias in information that is made public. This helps to understand why government can keep some information in the name of public interest.
- **Usability** refers to the timeliness of information and its understandability.

For the purpose of the current study, information quality refers to the Congolese perception that public service websites provide accurate information, timeless and without bias. We thus hypothesis as follows:

H7. Information quality influences positively citizens' satisfaction from E-government services, all else equal.

Table 4: Factors influencing users' satisfaction under the current study in the literature.

Factors	Definition in the current study	Sources
Awareness	Awareness is defined the level to which Congolese citizens are aware of public service portal existence and its available services.	Charbaji and Mikdashi (2003); Sia et al. (2001); Jaeger (2003); Frank K. Y. et al. (2010); Brown et al., (2002); Dixit and Datta (2010); Alawneh A. and al. (2013); Mukamurenzi et al. (2019).
Trust	Trust refers to the Congolese citizens' perception that government will act in way to satisfy their expectation and their confidence in using public services portal.	Ricardo S. et al. (2018); Welch et al. (2004); Pavlou and Fygenson (2006); Alawneh A. and al. (2013); Mukamurenzi et al. (2019); Vishanth et al. (2016); Frank K. Y. et al. (2010); Kim et al. (2003); Mohammed et al. (2010).
Security and Privacy refer	Security and Privacy refers to Congolese belief that government portal is protected from external attack and the confidence that their information will not be use or manipulated by unknown persons without their consent.	Alawneh A. and al. (2013); Mukamurenzi et al. (2019); Mohammed et al. (2010); Dixit and Datta (2010); Rao (2002); Yoo and Donthu (2001); Santos (2003).
Accessibility	Accessibility refers to Congolese perception of public portal availability and their facility to proceed with available services regardless to time and location.	Henry (2006); Yoo and Donthu, (2001); Lee and Lin (2005); Alawneh A. and al. (2013); Mukamurenzi et al. (2019); Mohammed et al. (2010); Moon (2002).
Service Quality	Service quality is defined as Congolese felling that the expected services are delivered in the right time, without bias and the capacity of the public service portal to respond without delay to citizens' demand.	Papadomichelaki and al. (2006); Lee and Lin (2005); Alawneh A. and al. (2013); Mukamurenzi et al. (2019); Mohammed et al. (2010); Santos (2003).
System quality	System quality refers to Congolese perception of public services websites ease of use in terms of clarity and simplicity of functions and web design.	Yoo and Donthu, (2001); Dixit and Datta (2010); Alawneh A. and al. (2013);
Information Quality	Information quality refers to the Congolese perception that public service website provides accurate information, timeless and without bias.	Bhattacherjee A. (2001); Charbaji, A. and Mikdashi T. (2003); Im (2017)

Source: Author

CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

3.1. Research design

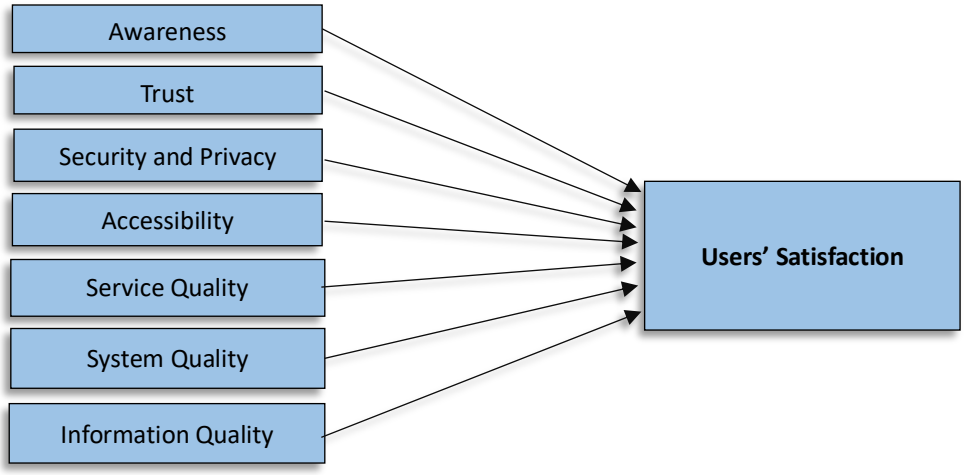
Previous studies undertaken in aim to measure users' satisfaction from E-government services used survey design. This paper use survey design for collecting data from Congolese citizens, which constitute the unit of analysis.

The study adopts the triangulation of both qualitative and quantitative approaches for the purpose of describing and understanding population's feedback about E-government services. Use of both quantitative and qualitative is preferable because they are complementary and will lead to reliable conclusion on the topic understudy.

3.2. Analytical Framework

The following figure illustrates the conceptual framework, which shapes the present study in aim to answer how selected determinants influence citizens' satisfaction in the Democratic Republic of Congo. It also shows how to find the correlation between variables.

Figure 3: Conceptual framework



Source: Author

In light of the analytical framework, the following linear regression equation will be used for statistical analysis:

Users' satisfaction= βo + β1* awareness + β2* trust + β3* security and privacy + β4* accessibility + β5* service quality + β6 * system quality + β7 * Information quality+ E

3.3. Sampling Procedures

Multistage cluster sampling method was used to determine the sample. This has been adopted because it gives to every elements in the population target a probability of being chosen in the sample for the survey. This is also because we do not have a complete list of the entire population who use E-government portal.

We randomly selected a set of 200 potential respondents with E-service

experience and sent the questionnaire.

3.4. Data Collection

This study used both primary and secondary sources of data collection. Primary data was collected through the questionnaire. Questionnaires were sent through emails. Secondary data will be collected through books, magazines, articles, published thesis, published reports, and all available document related to the study.

3.5. Survey Instrument

Congolese experience and opinion about their satisfaction form E-government services were collected through a questionnaire developed based on previous research in the area of E-satisfaction. Thus, each question was designed in light of the analytical framework and criteria of measurement.

The survey questionnaire, with a set of 42 questions, was divided in three part. First questions related to the overall satisfaction; second questions related to independents variables in seven groups; Awareness (a), Trust (b), Confidentiality and Security (c), Accessibility (d), Service quality (e), System quality (f), and Information quality (g). The last part was related to demographic information.

Originally designed in English, the survey questionnaire was translated into French for the better understanding of respondents whose French is the official and education language.

3.6. Criteria of measurement

To measure user's satisfaction in the purpose of this study, the survey questioned about awareness regarding the level to which Congolese citizens are informed about E-government services set for them.

Trust was measured on the basis of citizens' predisposition to use E-government services while security and privacy was measured by looking at citizens' confidence to rely on E-government without fear of any negative consequence about their private life or personal information.

Accessibility was measured by looking at the feeling of citizens on possibility of using public services portal wherever and whenever.

Service quality was measured in consideration of citizens' perception of E-government portals' effectiveness. For the purpose of this study, effectiveness is understood as the ability of the public service, through E-government portal, to achieve the assigned objectives and to response to complaints in a reasonable time.

System quality was measured by looking at web site design and ease of use of functionalities. Information quality was measured in terms of accuracy, timeliness, completeness and impartiality.

3.7. Data Analysis Procedures

Data analysis can be defined as the breaking down of large components of research data or information to simpler easily synthesized and understood part

(Mugenda A.G et al., 2009). For qualitative data obtained through open-ended questions, the researcher organized, categorized and encoded data while quantitative data from close-ended questions were analyzed and encoded by using the statistical software Stata.

CHAPTER 4: PRESENTATION, ANALYSIS AND DISCUSSION OF RESULTS

With the software Stata, variables were changed from categorical to numerical then we proceeded with descriptive statistics analysis of the survey respondents and all variables. Reliability of the survey questionnaire was tested and Pearson's correlation test was done followed by variance inflation statistics then regression was done before testing each hypothesis.

4.1. Descriptive statistics

4.1.1. Descriptive statistics of survey respondents

Out of 200 questionnaires sent, 142 were sent back. This represent 71% of response, which is highly acceptable. From these responses, the final sample was 142 Congolese. Sample population by gender is represented as follows, 54 females (38.03%) and 88 males (61.97%). Majority of respondents was mostly between 26-35 years old a total of 92 persons (64.79%) followed by those between 18-25 years old, a total of 39 persons (27.46%) then those between 46-55 years old, a total of 7 persons (4.93%) and the last was those between 46-55 years old, a total of 4 persons (2.82%) persons.

According to education level, 90 (63.38%) respondents earn a bachelor in Arts, 26 (18.31%) earn a master degree, 17 (11.97%) earn a bachelor degree, 7 (4.93%) earn a PhD and 2 (1.41%) a high school degree.

According to profession, 78 (54, 9 %) respondents are public official and 64 (51, 1) work in the private sector.

Table 5: Statistics of survey respondents

Variable	Category	Frequency	Percent	Cumulative Frequency	Cumulative percent
Gender	Female	54	38.03	54	38.03
	Male	88	61.97	142	100
Age	18-25	39	27.46	39	27.46
	26-35	92	64.79	131	92.25
	36-45	4	2.82	135	95.07
	46-55	7	4.93	142	100
Education	PhD	7	4.93	7	4.93
	Master degree	26	18.31	33	23.24
	Bachelor in Arts	90	63.38	123	86.62
	Bachelor	17	11.97	140	98.59
	high School Degree	2	1.41	142	100
Frequency of E-services utilization	Everyday	18	12.68	18	18.68
	1-5 times per week	40	28.17	58	40.85
	1-5 times per month	28	19.72	86	60.56
	Occasionally	56	39.44	142	100
Profession	Public officials	78	54.93	78	54.93
	Private sector workers	64	45.07	142	100

Source: Author calculations

4.1.2. Demographic category comparisons for satisfaction from E-government services

The following table shows, regarding to categories, how users are satisfied from E-government services. In gender category, male have a mean of 3 while female have lower than that, 2.537. According to age, those who are between 36-45 show the highest mean of 3.5 while the youngest in the sample (18-35) show a mean of 2.74. Looking to education level, PhD show a mean of 2.86, Master degree show the mean (2.88), Bachelor in Arts with a mean of 2.82, Bachelor with a mean of 2.71 and those who have a high school degree show the strongest mean of 3.

Table 6: Demographic category comparisons for satisfaction from E-government services

Variable	Category	Frequency	Mean	Standard deviation	Max	Min
Gender	Female	54	2.54	1.28	1	5
	Male	88	3	1.29	1	5
Age	18-25	39	2.74	1.27	1	5
	26-35	92	2.78	1.34	1	5
	36-45	4	3.5	1.29	2	5
	46-55	7	3.49	0.79	3	5
Education	PhD	7	2.88	1.57	1	5
	Master degree	26	2.89	1.48	1	5
	Bachelor in Arts	90	2.82	1.24	1	5
	Bachelor	17	2.71	1.21	1	5
	High School Degree	2	3	2.82	1	5
Frequency of E-services utilization	Everyday	28	2.79	1.42	1	5
	1-5 times per week	40	2.75	1.32	1	5
	1-5 times per month	18	2.94	1.3	1	5
	occasionally	56	2.86	1.26	1	5
Profession	Public officials	78	2.92	1.15	1	5
	Private sector workers	64	3.13	1.07	1	5

Source: Author calculations

4.1.3. Descriptive statistics of independents variables

The following table shows mean and standard deviation of each variable in the way they affect users' satisfaction from E-government services. Awareness has a mean of 3.49 with a standard deviation of 1.26; Mean of Trust is 3.34 and Standard deviation of 1.25. The Mean of Security and privacy is 3.66 (STD= 1.35); Accessibility has a mean of 3.26 (STD= 1.35); service quality's mean is 3.23 (STD= 1.26), system quality shows a mean of 3.085 (STD= 1.29) and information quality's mean is 3.12 (STD=1.28).

Table 7: Descriptive statistics of independents variables

Variable	N	Mean	Standard Deviation	Min	Max
Awareness	142	3.49	1.26	1	5
Trust	142	3.34	1.25	1	5
Security and Confidentiality	142	3.66	1.35	1	5
Accessibility	142	3.26	1.35	1	5
Service Quality	142	3.23	1.26	1	5
System Quality	142	3.08	1.29	1	5
Information quality	142	3.12	1.28	1	5

Source: Author calculations

4.1.4. Demographic category comparisons for Awareness

The following table shows for each demographic variable the distribution, in relation with awareness, regarding to mean and standard deviation.

For gender, female's mean is 3.26 (STD=1.33) and male's mean score is 3.63 (STD=1.21).

For age, 18-25 category scored a mean of 3.26 (1.33), the category of 26-35 scored a mean of 3.53 (STD=1.253), 36-45 shows a mean of 4.25 (STD=0.5)

and 46-55 category scored the highest mean of 3.71 (STD=1.25).

Considering Education, PhD category scored a mean of 3.42 (STD=1.13), Master degree scored a mean of 3.62 (STD=1.33), Bachelor in Arts scored a mean 3.51 (1.21), Bachelor scored a mean of 3.29 (STD=1.49), High School Degree scored the lowest mean of 2.5 (STD=2.12).

Considering frequency of using E-services, Everyday category scored a mean of 3.32 (STD=1.33), 1-5 times per week 3.25 (STD=1.29) 1-5 times per month shows a mean of 3.5 (STD=1.42) and the occasionally category scored the highest mean of 3.73 (STD=1.14).

Considering work experience in years, the less than 5 years category scored a mean of 3.43 (STD=1.13), 5-10 years category shows a mean of 3.434783 (STD=1.27) and the more than 10 years scored a mean of 3.44 (STD=1.42).

Table 8: Demographic category comparisons for Awareness

Variable	Category	N	Mean	Standard Deviation	Min	Max
Gender	Female	54	3.26	1.33	1	5
	Male	88	3.63	1.21	1	5
Age	18-25	39	3.26	1.33	1	5
	26-35	92	3.53	1.25	1	5
	36-45	4	4.25	0.5	4	5
	46-55	7	3.71	1.25	2	5
Education	PhD	7	3.43	1.13	1	4
	Master degree	26	3.62	1.33	1	5
	Bachelor in Art	90	3.51	1.21	1	5
	Bachelor	17	3.29	1.49	1	5
	High School Degree	2	2.5	2.12	1	4
Frequency of using E-services	Everyday	28	3.32	1.33	1	5
	1-5 times per week	40	3.25	1.29	1	5
	1-5 times per month	18	3.5	1.42	1	5
	Occasionally	56	3.73	1.14	1	5
work experience	less than 5	90	3.43	1.27	1	5
	5-10 yeas	23	3.43	1.27	1	5
	more than 10	9	3.44	1.42	1	5
Profession	Public officials	78	3.29	1.09	1	5
	Private sector workers	64	3.56	0.87	1	5

Source: Author calculations

4.1.5. Demographic category comparisons for Trust

The following table shows for each demographic variable the distribution regarding to mean and standard deviation.

For gender, female's mean is 3.03 (STD=1.36) and male's mean score is 3.52 (STD=1.14).

For age, 18-25 category scored a mean of 3.23 (STD=1.39), the range of 26-35 scored a mean of 3.33 (STD=1.23), 36-45 shows a mean of 4.25 (STD=0.5) and 46-55 category scored the highest mean of 3.57 (STD=0.79).

Considering Education, PhD category scored a mean of 3 (STD=1), Master degree scored a mean of 3.69 (STD=1.43), Bachelor in Arts scored a mean 3.22 (1.17), Bachelor scored a mean of 3.53 (STD=1.37), High School Degree scored of 3.5 (STD=2.12).

Considering frequency of using E-services, Everyday category scored the highest mean of 3.83 (STD=1.098), 1-5 times per week 3.025 (STD=1.37) 1-5 times per month shows a mean of 3.32 (STD=1.31) and the occasionally category scored mean of 3.41 (STD=1.14).

Considering work experience in years, the less than 5 years scored a mean of 3.31 (STD=1.26), 5-10 years category shows a mean of 3.52 (STD=1.27) and the more than 10 years scored a mean of 3.33 (STD=1.19).

Table 9: Demographic category comparisons for Trust

Variable	Category	N	Mean	Standard Deviation	Min	Max
Gender	Female	54	3.03	1.36	1	5
	Male	88	3.52	1.14	1	5
Age	18-25	39	3.23	1.39	1	5
	26-35	92	3.33	1.23	1	5
	36-45	4	4.25	0.5	4	5
	46-55	7	3.57	0.79	3	5
Education	PhD	7	3	1	1	4
	Master degree	26	3.69	1.44	1	5
	Bachelor in Art	90	3.22	1.169	1	5
	Bachelor	17	3.53	1.37	1	5
	High School Degree	2	3.5	2.12	2	5
Frequency of using E-services	Everyday	18	3.83	1.09	1	5
	1-5 times per week	40	3.03	1.37	1	5
	1-5 times per month	28	3.32	1.31	1	5
	occasionally	56	3.41	1.14	1	5
work experience	less than 5	90	3.31	1.26	1	5
	5-10 yeas	23	3.52	1.27	1	5
	more than 10	9	3.33	1.11	1	5
Profession	Public officials	78	3.19	1.08		1
	Private sector workers	64	3.38	0.94	1	5

Source: Author calculations

4.1.6. Demographic category comparisons for Privacy and confidentiality

The following table shows for each demographic variable the distribution, in relation with privacy and security, regarding to mean and standard deviation.

For gender, female's mean is 3.37 (STD=1.48) and male shows the highest mean 3.84 (STD=1.23).

For age, 18-25 category scored a mean of 3.48 (STD=1.48), the category of 26-35 scored a mean of 3.71 (STD=1.31), 36-45 shows a mean of 4.25 (STD=0.5) and 46-55 category scored a mean of 3.57 (STD=1.397).

Considering Education, PhD category scored a mean of 3.57 (STD=1.27), Master degree scored a mean of 4.31 (STD=1.05), Bachelor in Arts scored a mean 3.61 (1.3), Bachelor scored a mean of 3.61 (STD=1.3), High School Degree scored the lowest mean of 3 (STD=2.83).

Considering frequency of using E-services, Everyday category scored a mean of 3.57 (STD=1.53) 1-5 times per week 3.62 (STD=1.41), 1-5 times per month shows a mean of 3.67 (STD=1.33) and the occasionally category scored the highest mean of 3.73 (STD=1.24).

Considering work experience in years, the less than 5 years scored a mean of 3.71 (STD=1.33), 5-10 years category shows a mean of 3.73 (STD=1.48) and the more than 10 years scored a mean of 3.11 (STD=1.36).

Table 10: Demographic category comparisons for Privacy and confidentiality

Variable	Category	N	Mean	Standard Deviation	Min	Max
Gender	Female	54	3.37	1.48	1	5
	Male	88	3.84	1.23	1	5
Age	18-25	39	3.49	1.48	1	5
	26-35	92	3.72	1.31	1	5
	36-45	4	4.25	0.5	4	5
	46-55	7	3.57	1.39	1	5
Education	PhD	7	3.57	1.27	1	5
	Master degree	26	4.31	1.052	1	5
	Bachelor in Arts	90	3.61	1.3	1	5
	Bachelor	17	3.06	1.59	1	5
	High School Degree	2	3	2.83	1	5
Frequency of using E-services	Everyday	28	3.57	1.53	1	5
	1-5 times per week	40	3.62	1.41	1	5
	1-5 times per month	18	3.67	1.32	1	5
	occasionally	56	3.73	1.24	1	5
work experience	less than 5	90	3.71	1.33	1	5
	5-10 yeas	23	3.74	1.48	1	5
	more than 10	9	3.11	1.36	1	5
Profession	Public officials	78	3.002	0.98	1.17	4.67
	Private sector workers	64	3.41	0.77	1.17	4.67

Source: Author calculations

4.1.7. Demographic category comparisons for Accessibility

The following table shows for each demographic variable the distribution, in relation with accessibility, regarding to mean and standard deviation.

For gender, female's mean is 3.11 (STD=1.48) and male's mean score is 3.35 (STD=1.26).

For age, 18-25 category scored a mean of 3.36 (STD=1.4), the range of 26-35 scored a mean of 3.21 (STD=1.35), 36-45 shows a mean of 4 (STD=0) and 46-55 category scored a mean of 3 (STD=1.41).

Considering Education, PhD category scored a mean of 3.28 (STD=1.11), Master degree scored a mean of 3.1 (STD=1.44), Bachelor in Arts scored a mean 3.27 (1.31), Bachelor scored a mean of 3.41 (STD=1.58), High School Degree scored a mean of 3.5 (STD=2.12).

Considering frequency of using E-services, Everyday category scored a mean of 3.14 (STD=1.41) 1-5 times per week 3.05 (STD=1.39), 1-5 times per month shows a mean of 3.5 (STD=1.5) and the occasionally category scored a mean of 3.39 (STD=1.25).

Considering work experience in years, the less than 5 years scored a mean of 3.42 (STD=1.27), 5-10 years category shows a mean of 3 (STD=1.48) and the more than 10 years scored a mean of 3.33 (STD=1.41).

Table 11: Demographic category comparisons for Accessibility

Variable	Category	N	Mean	Standard Deviation	Min	Max
Gender	Female	54	3.111111	1.475161	1	5
	Male	88	3.352273	1.268901	1	5
Age	18-25	39	3.358974	1.404639	1	5
	26-35	92	3.206522	1.354991	1	5
	36-45	4	4	0	4	4
	46-55	7	3	1.414214	1	4
Education	PhD	7	3.285714	1.112697	1	4
	Master degree	26	3.076923	1.440085	1	5
	Bachelor in Art	90	3.277778	1.307092	1	5
	Bachelor	17	3.411765	1.583462	1	5
	High School Degree	2	3.5	2.12132	2	5
Frequency of using E-services	Everyday	28	3.142857	1.406711	1	5
	1-5 times per week	40	3.05	1.395046	1	5
	1-5 times per month	18	3.5	1.504894	1	5
	Occasionally	56	3.392857	1.245772	1	5
Work experience	less than 5	90	3.422222	1.271801	1	5
	5-10 yeas	23	3	1.477098	1	5
	more than 10	9	3.333333	1.414214	1	5
Profession	Public officials	78	3.016026	1.17974		1
	Private sector workers	64	3.136719	1.12593		1

Source: Author calculations

4.1.8. Demographic category comparisons for Service Quality

The following table shows for each demographic variable the distribution regarding to mean and standard deviation.

For gender, female's mean is 3.28 (STD=1.41) and male's mean score is 3.19 (STD=1.17).

For age, 18-25 category scored a mean of 3.46 (STD=1.35), the range of 26-35 scored a mean of 3.12 (STD=1.26), 36-45 shows a mean of 4 (STD=0) and 46-55 category scored the lowest mean of 2.86 (STD=0.899).

Considering Education, PhD category scored a mean of 3 (STD=1), Master degree scored a mean of 3.31 (STD=1.38), Bachelor in Arts scored a mean 3.13 (1.24), Bachelor scored a mean of 3.65 (STD=1.27), High School Degree scored the lowest mean of 3.5 (STD=2.12).

Considering frequency of using E-services, Everyday category scored a mean of 3.04 (STD=1.32) 1-5 times per week 3.25 (STD=1.33), 1-5 times per month shows a mean of 3.5 (STD=1.2) and the occasionally category scored a mean of 3.21 (STD=1.25).

Considering work experience in years, the less than 5 years scored a mean of 3.37 (STD=1.29), 5-10 years category shows a mean of 3 (STD=1.28) and the more than 10 years scored a mean of 3 (STD=0.87).

Table 12: Demographic category comparisons for Service Quality

Variable	Category	N	Mean	Standard Deviation	Min	Max
Gender	Female	54	3.28	1.41	1	5
	Male	88	3.19	1.17	1	5
Age	18-25	39	3.46	1.35	1	5
	26-35	92	3.12	1.26	1	5
	36-45	4	4	0	4	4
	46-55	7	2.86	0.89	2	4
Education	PhD	7	3	1	2	4
	Master degree	26	3.31	1.38	1	5
	Bachelor in Art	90	3.13	1.24	1	5
	Bachelor	17	3.65	1.27	1	5
	High School Degree	2	3.5	2.12	2	5
Frequency of using E-services	Everyday	28	3.05	1.31887	1	5
	1-5 times per week	40	3.25	1.33	1	5
	1-5 times per month	18	3.5	1.2	1	5
	Occasionally	56	3.21	1.25	1	5
Work experience	less than 5	90	3.37	1.29	1	5
	5-10 years	23	3	1.28	1	5
	more than 10	9	3	0.87	2	4
Profession	Public officials	78	2.78	0.94	1	5
	Private sector workers	64	2.81	0.93	1	4.75

Source: Author calculations

4.1.9. Demographic category comparisons for System Quality

The following table shows for each demographic variable the distribution, in relation with system quality, regarding to mean and standard deviation.

For gender, female's mean is 2.96 (STD=1.5) and male's mean score is 3.15 (STD=1.14).

For age, 18-25 category scored a mean of 3.25 (STD=1.46), the range of 26-35 scored a mean of 2.98 (STD=1.24), 36-45 shows a mean of 4 (STD=0) and 46-55 category scored a mean of 2.86 (STD=1.07).

Considering Education, PhD category scored a mean of 2.71 (STD=0.76), Master degree scored a mean of 3.26 (STD=1.25), Bachelor in Arts scored a mean 2.99 (STD=1.25), Bachelor scored a mean of 3.47 (STD=1.59), High School Degree scored a mean of 3 (STD=2.83).

Considering frequency of using E-services, Everyday category scored a mean of 2.82 (STD=1.39) 1-5 times per week 3.075 (STD=1.29), 1-5 times per month shows a mean of 3.39 (STD=1.46) and the occasionally category scored a mean of 3.13 (STD=1.19).

Considering work experience in years, the less than 5 years scored a mean of 3.16 (STD=1.31), 5-10 years category shows a mean of 2.96 (STD=1.397) and the more than 10 years scored a mean of 3 (STD=1).

Table 13: Demographic category comparisons for System Quality

Variable	Category	N	Mean	Standard Deviation	Min	Max
Gender	Female	54	2.96	1.5	1	5
	Male	88	3.15	1.14	1	5
Age	18-25	39	3.26	1.46	1	5
	26-35	92	2.99	1.24	1	5
	36-45	4	4	0	4	4
	46-55	7	2.86	1.07	1	4
Education	PhD	7	2.71	0.76	2	4
	Master degree	26	3.27	1.25	1	5
	Bachelor in Art	90	2.99	1.25	1	5
	Bachelor	17	3.47	1.59	1	5
	High School Degree	2	3	2.83	1	5
Frequency of using E-services	Everyday	28	2.82	1.39	1	5
	1-5 times per week	40	3.075	1.29	1	5
	1-5 times per month	18	3.39	1.46	1	5
	Occasionally	56	3.13	1.19	1	5
Work experience	less than 5	90	3.16	1.31	1	5
	5-10 yeas	23	2.96	1.39	1	5
	more than 10	9	3	1	1	4
Profession	Public Officials	78	2.76	1.09	1	5
	Private Sector workers	64	2.93	0.94	1	4.67

Source: Author' calculations

4.1.10. Demographic category comparisons for Information Quality

The following table shows for each demographic variable the distribution, in relation with information quality, regarding to mean and standard deviation.

For gender, female's mean is 2.78 (STD=1.37) and male's mean score is 3.33 (STD=1.18).

For age, 18-25 category scored a mean of 3.05 (STD=1.47), the range of 26-35 scored a mean of 3.12 (STD=1.25), 36-45 shows a mean of 4 (STD=0) and 46-55 category scored a mean of 3 (STD=0.82).

Considering Education, PhD category scored a mean of 2.71 (STD=0.49), Master degree scored a mean of 3.15 (STD=1.41), Bachelor in Arts scored a mean 3.11 (STD=1.21), Bachelor scored a mean of 3.29 (STD=1.57), High School Degree scored a mean of 3 (STD=2.83).

Considering frequency of using E-services, Everyday category scored a mean of 3.07 (STD=1.3) 1-5 times per week 3.15 (STD=1.23), 1-5 times per month shows a mean of 3.5 (STD=1.15) and the occasionally category scored a mean of 3 (STD=1.35).

Considering work experience in years, the less than 5 years scored a mean of 3.18 (STD=1.33), 5-10 years category shows a mean of 3.13 (STD=1.32) and the more than 10 years scored a mean of 3.11 (STD=0.92).

Table 14: Demographic category comparisons for Information Quality

Variable	Category	N	Mean	Standard Deviation	Min	Max
Gender	Female	54	2.78	1.37	1	5
	Male	88	3.33	1.18	1	5
Age	18-25	39	3.05	1.47	1	5
	26-35	92	3.12	1.25	1	5
	36-45	4	4	0	4	4
	46-55	7	3	0.82	2	4
Education	PhD	7	2.71	0.49	2	3
	Master degree	26	3.15	1.41	1	5
	Bachelor in Art	90	3.11	1.21	1	5
	Bachelor	17	3.29	1.57	1	5
	High School Degree	2	3	2.83	1	5
Frequency of using E-services	Everyday	28	3.07	1.3	1	5
	1-5 times per week	40	3.15	1.23	1	5
	1-5 times per month	18	3.5	1.15	1	5
	Occasionally	56	3	1.35	1	5
Work experience	less than 5	90	3.18	1.39	1	5
	5-10 years	23	3.13	1.32	1	5
	More than 10	9	3.11	0.93	2	4
Profession	Public officials	78	2.71	0.98	1	5
	Private sector workers	64	3.003	0.97	1	5

Source: Author calculations

4.2. Reliability of the survey Instrument

The following table shows that the survey instrument used in this study is reliable at 96.7% at least. Which is ensure further statistics analysis.

Table 15: Cronbach test result

Average inter item covariance	Number of items in the scale	Scale reliability coefficient
0.6998906	33	0.9671

Source: Author' calculations

4.3. Pearson's correlation coefficients test

The following table shows the results of the correlation coefficients performed between independent variables and control variables in aim to see at which extend they are correlated one another.

Based on results, all independent variables are positively correlated except for some control variables which are negatively correlated with some independents variables. Between Awareness and trust (r=0.669, p=0.000), Awareness and privacy and security (r=0.076, p=0.000), Awareness and accessibility (r=0.615, p=0), Awareness and service quality (r=0.603, p=0), Awareness and system quality (r=0.614, p=0), Awareness and information quality (r=0.631, p=0), awareness and gender (r=0.162, p=0.0545>0.05), awareness and age (r=0.104, p=0.2171), awareness and education (r=-0.146, p=0.08), Awareness and profession (r=0.1404, p=0.1), Awareness and Frequency of utilization (r=0.05, p=0.51).

Trust and privacy and confidentiality (r=0.70, p=0), trust and accessibility (r=0.57, p=0), Accessibility and service quality (r=0.77, p=0), service quality and system quality (r=0.85, p=0), system quality and information quality (r=0.76, p=0), information quality and gender (r=0.1, p=0.23), information quality and education (r=0.04, p=0.6).

Either there is a perfect correlation in most of cases or a significance 0.05 level or 0.01 level some cases. This situation leads to question if there is multicollinearity by performing a variance inflation factors analysis.

Table 16: Result of Pearson's correlation coefficients test

Variables	1	2	3	4	5	6	7	8	9	10	11	12
Awareness	1											
Trust	0.6692	1										
	0											
Privacy and Confidentiality	0.7637	0.7039	1									
	0	0										
Accessibility	0.6147	0.5686	0.5677	1								
	0	0	0									
Service Quality	0.603	0.634	0.5915	0.7731	1							
	0	0	0	0								
System Quality	0.6138	0.6337	0.6236	0.7652	0.848	1						
	0	0	0	0	0							
information Quality	0.6312	0.6457	0.6505	0.7276	0.7609	0.7768	1					
	0	0	0	0	0	0						
Gender	0.1617	0.1404	0.1645	0.1143	0.0029	0.0583	0.1004	1				
	0.0545	0.0956	0.0505	0.1757	0.9726	0.4907	0.2346					
Age	0.1042	0.1213	0.1202	0.0308	0.0093	0.055	0.0429	0.252	1			
	0.2171	0.1503	0.1543	0.7157	0.9124	0.5153	0.612	0.0025				
Education	-0.1458	-0.0231	-0.1622	0.0258	0.0905	0.03	0.0435	-0.1428	-0.2611	1		
	0.0835	0.7847	0.0537	0.7606	0.2839	0.7229	0.607	0.0899	0.0017			
Profession	0.1404	0.0895	0.2217	0.0523	0.0176	0.0806	0.1479	0.0682	-0.0314	0.0687	1	
	0.0957	0.2896	0.008	0.5368	0.835	0.3401	0.079	0.4202	0.7105	0.4164		
Frequency of utilization	0.0544	-0.0954	-0.0299	0.0677	-0.0066	-0.0315	-0.053	0.2071	-0.0468	-0.0238	0.0264	1
	0.5199	0.2588	0.7243	0.4237	0.9378	0.7098	0.5311	0.0134	0.5801	0.7785	0.7549	

Source: Author' calculations

4.4. Variance Inflation Factors

Because of the possibility to face multicollinearity between independents variables due to high significance of correlation found in the above results. The following table shows result of Variance Inflation Factors in aim to check multi-collinearity between service quality, system quality, information quality, accessibility, awareness, trust gender, age, education, Profession, and frequency of utilization. According to the standard, VIF should be less than 10. That what we observe in the following table. This means even though there is high correlation between independents variables, it will not affect negatively the regression test.

Table 17: Variance Inflation Factors

Variable	VIF	1/VIF
service quality	4.7	0.21
system quality	4.53	0.22
information quality	3.39	0.29
Privacy and Confidentiality	3.26	0.31
Accessibility	3.15	0.32
Awareness	2.94	0.34
Trust	2.57	0.38
Education	1.2	0.83
Gender	1.2	0.83
Age	1.16	0.87
Frequency of utilization	1.13	0.89
Profession	1.12	0.88
Mean VIF	2.53	

Source: Author' calculations

4.5. Regression Model

The following table shows the results of the performed multilinear regression. With 142 observations, E-satisfaction is explained by the regression model at 61, 4 % (R=0.614) and this model is statistically significant according to the p value (prob. > 0.0000) with a degree of freedom between 12 and 129 (17.12). This allows us to opine that at least one of independents variables (Awareness, Trust, Privacy and Confidentiality, Accessibility, Service quality, System quality, and information quality) or control variables in the regression model explains the change, which happens in the dependent variable (E-satisfaction). We thus test our hypotheses based on regression coefficient of each independent and control variable in relation with the dependent variable.

Table 18: Regression Coefficient

E-satisfaction	**Coef.**	**Std. Err.**	**t**	**P>t**	**[95%Conf. Interval]**	
Awareness	0.2146249	0.1037135	2.07	0.041**	0.009425	0.419825
Trust	-0.032027	0.0959026	-0.33	0.739	-0.22177	0.157719
Privacy and security	0.1184526	0.1210401	0.98	0.33	-0.12103	0.357933
Accessibility	0.1713707	0.0939012	1.83	0.07***	-0.01442	0.357157
Service quality	0.2613403	0.141808	1.84	0.068***	-0.01923	0.541911
System quality	-0.102593	0.126023	-0.81	0.417	-0.35193	0.146747
information quality	0.3426655	0.1145489	2.99	0.003*	0.116028	0.569303
Gender	0.2108411	0.1370707	1.54	0.126	-0.06036	0.482039
Age	0.1282897	0.0944799	1.36	0.177	-0.05864	0.315221
Education	-0.046764	0.0908928	-0.51	0.608	-0.2266	0.13307
Profession	-0.010187	0.1295117	-0.08	0.937	-0.26643	0.246055

Frequency of Utilization	-0.039458	0.0597804	-0.66	0.51	-0.15773	0.078819
_cons	-0.244057	0.4857517	-0.5	0.616	-1.20513	0.717014

* The variable coefficient is significant at 0, 01% level
**The variable coefficient is significant at 0, 05% level
*** The variable coefficient is significant 0, 1% level

4.6. Hypothesis testing

4.6.1. Hypothesis 1

Based on the regression results, Awareness scored a regression coefficient of 0.2146 and this is statistically significant at 0.05 (5%) because the p-value is equals to 0.041. With this in mind, we argue that there is enough evidence to reject the null hypothesis.

4.6.2. Hypothesis 2

From the performed regression, trust is negatively associated with E-satisfaction and shows a p-value of 0.7 which is higher to the level of significance. Thus, we don't have enough evidence to reject the null hypothesis.

4.6.3. Hypothesis 3

Privacy and security regression coefficient equals to 0.12 but not statistically because of its p-value higher than the significance level. In this case there is no enough evidence to reject the null hypothesis.

4.6.4. Hypothesis 4

Accessibility scored a regression coefficient of 0.17 which is significant

at 0.1 (10%) level because its p-value equals to 0.07. We thus have enough evidence to reject the null hypothesis.

4.6.5. Hypothesis 5

With a regression coefficient of 0.26 which is statistically significant at 0.1 (10%) level because of its p-value equivalent to 0.068. we thus have enough evidence to reject the null hypothesis.

4.6.6. Hypothesis 6

The regression coefficient of this independent variable shows that system quality is negatively associated with E-satisfaction. And was not statistically significant. We thus don't have enough evidence to reject the null hypothesis.

4.6.7. Hypothesis 7

The independent variable scored a regression coefficient of 0.34 which is highly significant at 0.01 level because of its p-value of 0.003. We thus have enough evidence to reject the null hypothesis.

Table 19: Hypothesis testing

Hypothesis	*Results*
Awareness influences positively E-satisfaction	Confirmed
Trust influences positively E-satisfaction	Non confirmed
Privacy and Security influence positively E-satisfaction	Non confirmed
Accessibility influences positively E-satisfaction	Confirmed
Service quality influences positively E-satisfaction	Confirmed
System quality influences positively E-satisfaction	Non confirmed
Information quality influences positively E-satisfaction	Confirmed

Source: Author' analysis

4.7. Discussion of findings

Findings of the current study help us to respond to our research questions and call us to understand why some factors were confirmed and others not. By conducting a survey, the study aimed to figure out at which extent Congolese citizens are satisfied from E-government services and what are factors which affect significantly their satisfaction.

Out of 7 hypotheses, 4 were confirmed. This is the case for Awareness, Accessibility, Service quality and information quality.

Awareness which is understood as the level to which Congolese citizens are aware of public service portal existence and its available services explains significantly user's satisfaction from E-government. This may be explained by

the fact that awareness about E-government services existence is the starting point for any person to use them or to inquire about quality or reliability of those services. Without this knowledge, E-services are useless. In a country relative penetration of internet and an administration dominated by face to face process in public service delivery, citizens are less informed about government or agencies plan and concrete innovation in telecommunication sector. Moreover, public officials tend to advertise less about E-services because they reduce opportunities of unlawful payment.

Thus awareness, as a gateway for any person to use E- services, explains 23% of variance of Congolese satisfaction from those services. These findings are similar to what has been argued in the literature regardless to social, political, economic and cultural differences (Dixit and Datta, 2010; Alawneh A. and al., 2013; Mukamurenzi et al., 2019).

Accessibility is understood as Congolese perception of public portal availability and Congolese possibility to proceed with available services regardless to time and location. In the current study, this independent variable has an impact on Congolese E-satisfaction. This is explained in the way that infrastructure are poor for an effective E-government. Internet is both expensive and at some extent low quality. Out of 24 provinces, at least two-thirds of them have poor connection to internet. Another problem may be electricity. Because the country is relatively electrified, some services may be available for a time and not

when a user would like to proceed. Therefore, that situation affects his satisfaction.

Being able to obtain needed information or service regardless to place and time is more critical when it comes to researchers or public servants when they want to access data or crucial information when conducting a research or designing a policy.

Regardless to Congolese situation, infrastructures are very important for any E-government project. Lack of required infrastructure leads to E-government failure. This is more to do with, ICTs and internet penetration level, stability, speed, and E-literacy.

Findings show that Accessibility explains 17 % of variance of users' satisfaction from E-government services. These findings are similar to those of Henry (2006); Yoo and Donthu, (2001); Lee and Lin (2005); Alawneh A. and al. (2013).

Service quality was defined as Congolese felling that the expected services are delivered in a reasonable time, without bias and the capacity of the public service portal to respond without delay to citizens' demand. The performed regression teaches that this independent variable explains 26% of variation in users 'satisfaction from E-government services. This can be explained by the fact that when users rely on E- services, it's because they want to overcome inefficiency and ineffectiveness of face to face administration. Thus the extent to which

E- services can meet users' expectations affects their satisfaction. In the case of Congolese administration which is known as less effective and efficient, E-government has been presented as a solution to that. Thus, quality of services is the backbone of any public portal. Findings of the current study show that service quality is one of factors which lead to E-satisfaction. This is similar to what has been found in the literature (Papadomichelaki and al., 2006; Lee and Lin, 2005; Alawneh A. and al., 2013; Mukamurenzi et al., 2019).

For the purpose of the current study, it was stated that Information quality refers to the Congolese perception that public service website provide accurate information, timeless and without bias. Based on the findings, information quality is the most important factor for Congolese citizens E-satisfaction. Information quality explains 34% of the variation of users' satisfaction. This may be understood by the fact that most of government portals are between the first and the third stage of E-government implementation process. These stages emphasis more on information availability timelessly and the possibility to download some forms.

Because of its social and political situation, citizens tend to search on government websites information or laws related to aspects of daily life. Unfortunately, because of bias due to political affiliation which poison public administration, citizens look at information quality as one of the most important thing which should be found on public portals.

None of control variables could explain significantly the variation in users' satisfaction from E-government services. We can thus conclude that there is no spurious variable which can explain or change the relation between independents and dependents variables.

Thus our previous regression model can be rewrite as follows:

E-satisfaction= -0.24+0.215*Awareness+0.473*Accessibility+0.261*Service quality+0.343*Information quality

According to the above, there is 0.215 units change in E-satisfaction when Awareness changes in same direction; there is 0.473 units change E-satisfaction when accessibility changes in same direction; there is 0.261 change in E-satisfaction when service quality changes in the same direction; there is 0.34 units change in E-satisfaction when Information quality changes in the same direction.

Findings teach about E-government and gender divide and generation gap on E-government utilization. It appears that females are less exposed to ICTs due to their social, economic and education levels. Thus, wrongly implemented, E-government can widen gender inequality instead of contributing to women empowerment.

E-government requires E-literacy, unfortunately females are marginalized in many developing countries because of lack of adequate education. With such situation, use of E-government is hypothetical for them while males are largely exposed to ICTs and may have more advantage then females. In aim to

address this, E-government project should take into account "gender analysis" which is understood as collection and analysis of sex-disaggregated information about Men and Women experiences, knowledge, talents and needs in aim to understand differences so that policies, programs and projects can identify and meet different needs of men and women (UNESCO, 2003).

Studies show that, in industrialized countries even though women use E-services, it's often for practical purpose such shopping or find specific information while in developing countries, women have less access to internet because of they lack income, time and/or interest (Boran A. and Emad A., 2010).

However, E-government may be a tool for women empowerment. This required availability of information and possibility to interact (participate); adequate gender analysis in aim to consider women expectations from E-government services; capacity building and E-education for females at the early stage; affordable connectivity; customized system regarding to local realities and languages; government commitment; and women commitment to jump into the E-government era and take advantage of it.

To the other side, the generation gap is explained by the fact that young people are growing in the technologic revolution era and are likely to understand and master ICTs while old generation (45 years old to above) may be struggling a lot in this changing process in aim to catch up with the growing scree level bureaucracy while they were accustomed to face to face administration.

Among difficulties faced by the Congolese administration, aging public servants is one of them. This may be among barriers to E-government implementation because of their slowness to update working system or opposition to change due to path dependency. However, capacity building and renewal of public service agents are the only way to go for an administration which can be a lever for development and effective and efficient public service delivery.

CHAPTER 5: CONCLUSION AND RECOMMENDATION

In this chapter we review the process of this work, give policy recommendation and suggestions for further research.

5.1. Conclusion

This study aimed evaluate at which extend users of E-government services in the Democratic Republic of Congo are satisfied and to identify what are factors which determine their satisfaction.

For the above purpose, we chose the satisfaction confirmation theory which states that customers are willing to continue utilization of a product or a service after this one has met their expectations. Following the literature, seven independent variables were retain in aim to test if they have any change on the dependent variable E-satisfaction. For independent variables, Awareness, Trust, Privacy and Security, Accessibility, Service Quality, System Quality, and Information Quality were the maintained independent variables. For the purpose of avoiding a spurious variable which can explain the change in the dependent variable, five control variables were include in the regression model: Gender, Age, Education, Profession, and Frequency of E- services Utilization.

For testing our hypotheses which stated that each independent variable influences positively the dependent variable, a survey was conducted on 200 per-

sons initially but only 142 sent back questionnaires. The final sample of the survey was 142 Congolese randomly selected who had an experience with E-services.

The descriptive statistics show an equilibrium between both male and female, public sector worker and private sector as well. After performing Pearson's correlation, it appears that all independent variables and control variables were positively and significantly correlated.

In response to the evident correlation among independent and control variables, a variance inflation analysis was performed. This one showed the absence multiple correlation.

The performed regression coefficient shows that out of the seven independent variables, only four could significantly explain the changes in the dependent variables.

Awareness explains changes in Congolese E-satisfaction from E-government services at 0, 05 level of significance, Accessibility and Service quality at 0.1% level of significance; and Information quality at 0.001%.

From the multiple linear regression results, null hypothesis was rejected for Hypothesis 1 which was confirmed; there was not enough evidence to reject null hypothesis for hypothesis 2, 3 and 6, while results provided enough evidence to reject to reject hypotheses 4, 5 and 7 which were confirmed.

Thus, Awareness, Accessibility, Service quality and Information quality

are the one who impact positively Congolese satisfaction from E-government services. To the other side, the means related to the overall satisfaction from E-services was under the range of satisfaction. Which means, Congolese are not yet convinced from E-government services.

5.2. Policy Recommendation to Congolese government

The present study results call for valuable recommendations for the Congolese government in its plan and action in E-government sector. First, it calls the necessity of having a national plan for E-government implementation instead of ministries or agencies willing to implement online services in aim to avoid discrepancy in public sector regarding E-government. This means, government and policy makers should go further than expressing their willing to digitalize Congolese administration. Moving in the way of effective E-government will improve government efficiency and contribute to fight corruption which is one of most dangerous diseases which keep the country down.

In light of E-government implementation, all stakeholders in E-government implementation should prioritize quality of information by making information available, updated, timeless, and free of bias.

For this information to be useful for users' satisfaction, it required to the government to work on accessibility of E- services regardless to time or place where a user can be located. This require to work on infrastructure which support E-government implementation. Upstream, government should work on quality of

each proposed service in terms of effectiveness and responsiveness when there is any inquiry.

Finally, findings of the current study taught that without awareness, E-government services will be useless. In response to that, government and agencies should advertise more about E-services existence and increase citizens e-education in aim to enhance awareness and ability of citizens to use E-services.

Even though, they were none significant according to the results of the current study, privacy and security should be one of main concerns of government, planers, policy makers and any other stakeholder in the process on E-government implementation because the more the country increase its E-government presence, privacy and security call a specific attention in aim to ensure citizens.

5.3. Recommendations for future studies

This study was conducted mainly in Kinshasa, capital city of the Democratic Republic of Congo. Further researches should extend scope of the study to other region in the country in aim to obtain a global view which consider social and economic differences which occur between provinces.

Subsequently to the above, further studies should capture a larger sample size than the one used for this study in aim to increase validity of results.

Moreover, researchers should look at other factors which can explain users' satisfaction from E-government services and/or analyze in which cases con-

trol variables of the current study can influence users 'satisfaction from E-government service. Also, gender gap should be explore deeply in aim to promote E-government for women empowerment.

The current study used confirmation-expectation theory in aim to evaluate Congolese E-satisfaction, future studies may use other theories in Information System field in aim to test if this studies' results remain constant.

5.4. Limitation of the study

In regard to the final results provided by this study, several difficulties were faced during the research period. First, due to the geographical scope of the study, results reflected only a view from the main city of the country. Also, collecting data with a questionnaire sent through e-mail was not easy because of distance between the researcher living place and the country.

Moreover, time was a big constraint for the researcher. Because of time limitation, out of 200 hundred questionnaire, only 71% were sent back. Also, the current research could not obtain interview with main players in E-government in aim to understand why Congolese E- services accused some weaknesses on factors which influence users E-satisfaction.

Bibliography

- Alaa A. AL Athmay, Fantazy K. and Kumar V. (2016), "E-government adoption and user's satisfaction: an empirical investigation", *Journal of Business* Vol. 11 No. 1, 57-83
- Alawneh A., Al Refai H. and Batiha K.(2013), "Measuring user satisfaction from E-government services: lessons from Jordan", *Government Information Quarterly* (30), 277-288
- Bhattacherjee A. (2001), "Understanding Information Systems Continuance: An Expectation-Confirmation", *MIS Quarterly,* Vol. 25, No. 3, 351-370
- Bovens M. and Zouridis S., (2002), "From screen level-bureaucracy to street-level bureaucracies: how information technology is transforming administrative discretion and constitutional control", *Public Administration Review* 62 (2), 174-184
- Bernd W. and Oliver Tuna K. (2016), "Local E-government and user satisfaction with city portals – the citizens' service preference perspective", *International Revue Public Nonprofit Mark* (2016) 13:265–287
- Bwalya, K. J., and Mutual, S. (2014), *E-government: Implementation, adaptation and synthesis in developing countries*, De Gruyter Saur, Berlin/Munich
- Charbaji, A. and Mikdashi T. (2003) "A path analytic study of the attitude toward E-government in Lebanon," *Corporate Governance* (3) 1, 76-82

- Welch E, Hinnant C. and Moon M. (2004), "Linking Citizen Satisfaction with E-government and Trust in Government", in *Journal of Public Administration Research and Theory,* Vol. 15, no. 3, 371-391
- Fazio, R. and Zanna, M. (1981) "Direct Experience and Attitude-Behavior Consistency" in *Ad- vances in Experimental Social Psychology* (6), L. Berkowitz (ed.), Academic Press, New York, 161-202
- Gable M. (2015), "Efficiency, Participation, and Quality: Three Dimensions of E-government", *Social Science Computer Review,* Vol. 33(4) 519-532
- Gregory G. (2007), "E-government, Manuscript accepted by Sage Publications for publication", *the Encyclopedia of Political Communications.*
- Frank K., James Y. and Viswanath V., Susan A., Paul J. and Kar Y., "Modeling Citizen Satisfaction with Mandatory Adoption of an E-government Technology", in *Journal of the Association for Information Systems,* Volume 11, Issue 10, 519-549
- Harfouche A. (2010) "Big brother is watching you: inhibitors and enables of public eservices in Lebon", Government Workshop, Brunel University, March 18-19
- Harfouche A. and Kalika M., (2009), "E-government implementation and acceptance: A study of the challenges facing Lebanon", 15th Americas Conference on Information Systems, 1-15

- Halachmi A. and Greilling D. (2013), "Transparency, E-government, and Accountability", *Public Performance and Management Review*, 36:4, 562-584, available at https://doi.org/10.2753/PMR1530-9576360404
- Lee G. and Lin H., (2005), "Customer perceptions of e-service quality in online shopping", *International Journal of Retail & Distribution Management*, Vol. 33 Issue: 2, 161-176
- Bertot J., Jaeger P. and Grimes J. (2010), "Using ICTS to create culture of transparency", in *Government Information Quarterly* No.27, 264–271
- Bertot J., Jaeger P. and Grimes J. (2012), "Promoting transparency and accountability through ICTs, social media, and collaborative E-government", *Transforming Government: People, Process and Policy*, Vol. 6, No. 1, 2012
- Karen L. and Lee J. (2001), "Developing fully functional E-government: A four stage model", *Government Information Quarterly* No.18, 122–136
- Kodjo N. (2018), "L'état Des Initiatives D'administration Électronique en République Démocratique Du Congo (1940-2018)", *International Journal of Digital and Data Law* Vol 4, 129-140
- Lupu D. and Lazăr G. (2015), "Influence of E-government on the level of corruption in some EU and non-EU states", *Procedia Economics and Finance,* No. 20, 365 – 371

- Macintosh A. (2004), "E-participation in policy-making", Proceedings of the 37th Hawaii International Conference on System Sciences
- Manuel Pedro Rodriguez et al. (2018). *E-participation in Smart cities; technology and models of governance for citizen engagement*, Springer, Texas
- Maria Manta Conroy, Jennifer Evans-Cowley (2006), "E-participation in planning: analysis of cities adopting online citizen participation, Environment and Planning", *Government and Policy,* volume 24, 371-384
- Mohammed A., Ahmed K., Shuib B. (2010), "A proposed instrument dimensions for measuring E-government service quality", *International Journal of u- and e- Service, Science and Technology,* issue 3:4, 1-18
- Mugenda A.G and Mugenda O. M. (2010), *Research methods quantitative and qualitative approaches,* Nairobi, African Center for Technology Studies (ACTS) Press
- Mukamurenzi S, Gronlund A. and Islam M. (2019), "Improving quality of E-government services in Rwanda: A service provider perspective", available at www.wileyonlinelibrary.com
- Musso J., Weare C., and Hale M., (2000), "Designing Web technologies for local governance reform: Good management or good democracy?" *Political Communication* 17, 1-19
- RaoV.M. (2007), *E-governance,* ABD publishers, Delhi

- Ricardo S., Jason B. and Mario Ferrer (2019), "The role of trust in E-government effectiveness, operational effectiveness and user satisfaction: lessons from Saudi Arabia in e-G2B", *in Government Information Quarterly*, volume 36, issue 1, 39-50
- Seok-Jin Eom (2014), "Improving Governmental Transparency in Korea: Toward Institutionalized and ICT-Enabled Transparency", *The Korean Journal of Policy Studies*, Vol. 29, No. 1, 69-100
- Shim D. C. and Eom T. H. (2008), "E-government and Anti-corruption; Empirical Analysis of International Data", *International Journal of Public Administration* 31 (3): 298-316
- Stephen P. Osborne (2010), "Delivering Public Services: Time for a new theory?", in *Public Management Review,* Vol. 12 Issue 1, 1–10;
- OECD (2005), *E-government for better government*, ISNN 92-64-01833-6
- Oliver L. R (1980), "A cognitive model of the antecedents and consequences of satisfaction decisions", *Journal of Marketing Research*, 17 (4), 460-469
- Oliver L. R. (1999), "Whence consumer loyalty", *journal of marketing* vol. 63, special issue, 33-44
- Pavlou, P. A. (2003), "Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model," *International Journal of Electronic Commerce* (7) 3, 101-134

- Pavlou, P. A. and Fygenson M. (2006), "Understanding and predicting electronic commerce adoption: An extension of the theory of planned behavior," *MIS Quarterly* (30) 1, 115-143
- Safeena R. and Kammani A. (2013), Conceptualization of Electronic Government Adoption, in International Journal of Managing Information Technology Vol. 5, No. 1, 1-10
- Santos J., (2003), "E-service quality: a model of virtual service quality dimensions", *Managing Service Quality: An International Journal*, Vol. 13 Issue: 3, 233-246
- Shailendra C. and Sushil S. (2007), "E-government and E-Governance: Definitions/Domain Framework and Status around the World", available at www.researchgate.net
- Wong W. and Welch E., "Does E-government promote accountability? A comparative analysis of website openness and government accountability", *International Journal of Policy, Administration, and Institutions*, Vol. 17, No. 2, 275-297
- Yoo B. and Donthu N. (2001), "Developing a scale to measure a perceived quality of an online shopping site (sitequal)", *Quarterly Journal of Electronic commerce*, 2(1), 31-47
- Yildiz (2007), "E-government research: reviewing the literature, limitations, and ways forwards", *Government Information Quarterly*, volume 24, issue 3, 646-665

- Zavareh F. et al. (2012), “E-services quality dimensions and their effects on e-customer satisfaction in internet banking services”, *Social and Behavioral Sciences*, Vol 40, 441-445

Appendix

SURVEY QUESTIONNAIRE

Dear Respondent,

Thank you for your willingness to participate in this survey. I'm Kakala Mutangala Jerry, Master Degree Student at Seoul National University, Graduate School of Public Administration, South Korea. The present survey is conducted in light of the research I'm carrying out for my thesis entitled, **"Measuring Users' Satisfaction from E-government Services in the Democratic Republic of Congo"**. This is for the partial fulfillment of the academic requirement in aim to earn a Master Degree in Public Management and Public Sector Reforms. Collected information will remain confidential and will be used exclusively in end of the current study.

You are kindly asked to read keenly each statement and respond at the best of your ability and where necessary by circling a number from 1 to 5 which express your degree of agreement or disagreement with the statement. There are no accurate or inaccurate responses. This will take 10 minutes of your time.

For your best understanding, E-government service relates to any public service available on the public service web site (presidency, ministry, public agency, etc.) such as finding needed information, laws, government or agency policies, possibility to download forms, to submit any file in a specific procedure, possibility to pay tax on line, to request information from a given public service, to exchange information between ministries or public agencies, etc.

Responses to this survey are voluntary.

Thank you for your cooperation.

1. E-satisfaction

E-satisfaction	Strongly Disagree	Disagree	Uncertain	Agree	Strongly agree
a. I'm satisfied from E-government services	1	2	3	4	5
b. E-government services meet my expectation					
c. I will continue to use E-government service	1	2	3	4	5
d. I can recommend people to use E-government service	1	2	3	4	5

2. Factors Influencing satisfaction from E-government services

1. Awareness	Strongly Disagree	Disagree	Uncertain	Agree	Strongly agree
a. Awareness of the existence of E-government service is important for me to use it.	1	2	3	4	5
b. Public services advert enough about E- services existence.	1	2	3	4	5
c. Public services should advert more about E- services to increase citizens' awareness.	1	2	3	4	5
d. Awareness about E-services existence influences positively my satisfaction from it.	1	2	3	4	5
2. Trust					
a. Trust in the potential of E- services to meet my expectations is important for me to use them	1	2	3	4	5
b. E-government services inspire me trust	1	2	3	4	5
c. Trust in E-government services influences positively my satisfaction from those services.	1	2	3	4	5
3. Privacy and Security					
a. Public Service web site warns me about privacy notice.	1	2	3	4	5
b. Privacy notice is important for me to use E-government services.	1	2	3	4	5
c. I feel safe for my private information when I use E-government services.	1	2	3	4	5

1. Awareness	Strongly Disagree	Disagree	Uncertain	Agree	Strongly agree
d. I'm worried if my information are used without my consent.	1	2	3	4	5
e. Public Services web sites are safe from hackers.	1	2	3	4	5
f. Privacy and Security influence positively my satisfaction from E-government services.	1	2	3	4	5
4. Accessibility					
a. E-government services are accessible for me regardless to time and place where I'm located.	1	2	3	4	5
b. It is easy for me to use E-government services.	1	2	3	4	5
c. Ease of use of E-government services motivates me to continue using them	1	2	3	4	5
d. Accessibility of E-government services influence positively my satisfaction from them.	1	2	3	4	5
5. Service Quality					
a. E-government services are effective.	1	2	3	4	5
b. E-government services are reliable.	1	2	3	4	5
c. I get quick reply when I complain or request for information from E-government services.	1	2	3	4	5
d. Service Quality Influences positively my satisfaction from E-government services.	1	2	3	4	5
6. System Quality					
a.Public services Web Site are friendly to use	1	2	3	4	5
b.Public Service Web site are well designed	1	2	3	4	5
c.System Quality influences positively my satisfaction from E-government services	1	2	3	4	5
7. Information Quality					
a.Public Services Web Site provides needed information	1	2	3	4	5
b.Public Service Web Site provides sufficient information	1	2	3	4	5
c.Public Services Web Site provide reliable information	1	2	3	4	5
d.Public Service Web site provides updated information	1	2	3	4	5
e.Information Quality influences positively my satisfaction fro m E-government services	1	2	3	4	5

b. Demographic Information

a. Gender :

Female ( ) Male ( )

b. Age Group:

- 18-25 years ( ) - 26-35 years ( ) - 36-45 years ( ) - 36-55 years ( ) -56- 65 years ( ) -over 65 years ( )

c. Education Level:

Primary school ( ) Secondary School ( ) Undergraduate ( ) Mater Degree ( ) PhD ( )

d. Profession:

e. Organization affiliation:

f. Years of Work Experience:

g. Frequency of Using E-government Services:

Every day ( ) 1-5 per week ( ) 1-5 per month ( ) occasionally ( )

h. Public Service Web site I usually use

1.
2.
3.

Abstract in Korean

콩고 민주공화국의 전자정부 서비스 사용자 만족도 측정

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글로벌행정전공

전자정부는 국가 공공 서비스 제공 효율성과 효과성의 지렛대 역할을 해왔다. 콩고민주공화국의 많은 부처와 기관들은 전자정부 서비스를 제공하기 시작했다. 본 연구는 전자정부 서비스 사용자의 만족도를 측정하고, 사용자 만족도가 전자정부 프로젝트의 주요 목표인 만큼 그 만족도에 영향을 미치는 결정적인 요인을 식별하는데 중점을 두었다. 전자정부 서비스 경험이 있는 시민 142명을 대상으로 조사를 실시한 후 다중선형회귀 분석을 실시했다. 연구결과, 전체적인 이용자의 만족도가 상대적으로 낮은 것을 발견할 수 있었으며, 7가지 독립 변수 가운데 4가지(인식, 접근성, 서비스 품질, 정보 품질)가 전자정부 서비스 만족도에

영향을 주는 가장 유의미한 변수로 확인되었다. 회귀 분석에는 5가지 통제 변수(성별, 연령, 교육, 직업 및 전자 서비스 이용 빈도)가 포함되었다. 놀랍게도 그 중 어느 것도 사용자 만족도에 큰 영향을 미치지 않았다.

본 연구는 전자정부의 잠재력을 극대화하고 전자정부 서비스 사용자들의 만족도를 충족시키기 위한 추가 연구가 진행되어야 함을 시사하고 있다.

주제어: 전자정부, 전자정부 서비스, 전자정부 만족도, 신뢰, 개인 정보, 접근성, 서비스 품질, 정보 품질

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In Memoriam

In memory of my mother, ***Christine Mwema****, a star, which abruptly disappeared from my sky but whose rays warm my heart and lighten my ways.*